[appdelegates]™

QUICK, WARRANTY VOIDING FIX, FOR STUCK-ON SAFE-MODE CRIO SWITCH

1/17/2012

NOTE!!! This WILL Void Your Warranty

- …but our CRIO is pretty old and we've only got 5 more weeks and we have a new one for the main robot…

- Unless you have a lot of experience soldering and disassembling/reassembling electronics, have a mentor do this or help you with it.

Initial Steps

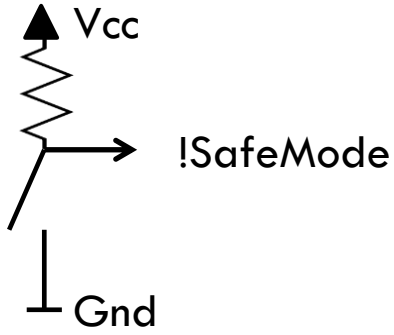
- Have some “canned air” handy
- Remove all modules
- Unscrew all Philips head screws on underside of CRIO, keep in a safe spot
- Gently remove the motherboard from the case

Cleaning

- Our CRIO was chock full of **metal shavings**. It's a miracle it worked at all. This year, we'll have new rules about metal work on the 'bot while the control system is mounted
- Used the canned air to thoroughly clean the mobo and enclosure. Pay special attention around and underneath the dip switches

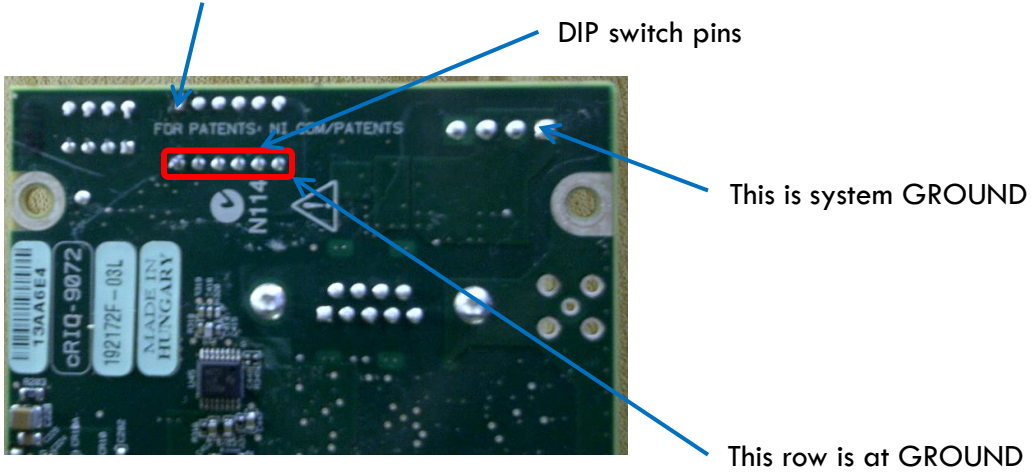
The DIP Switch

This is probably what the circuit looks like



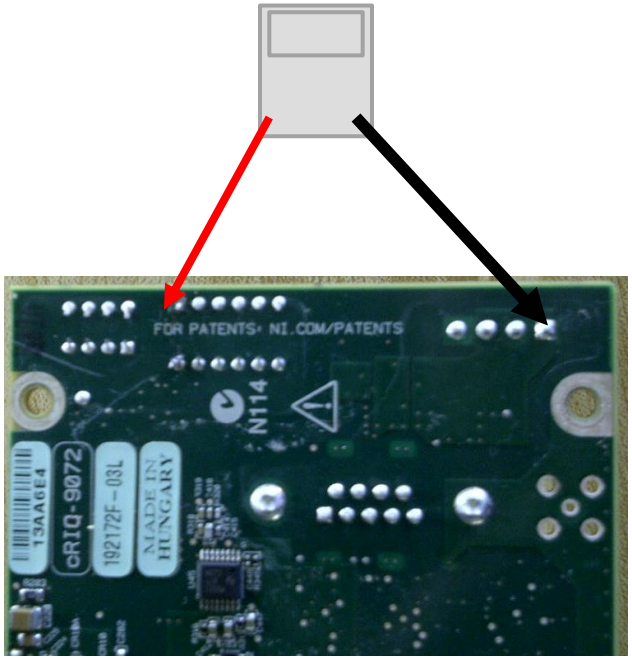
When DIP is closed,
!SafeMode = 0 and you
Cannot re-image.

SAFE-MODE OUTPUT
Moving the switch should change this pin from connected to GROUND to Floating (no connect) when doing a connectivity test between system ground And this pin (see next page).



Underside of CRIO

Test The DIP Switch



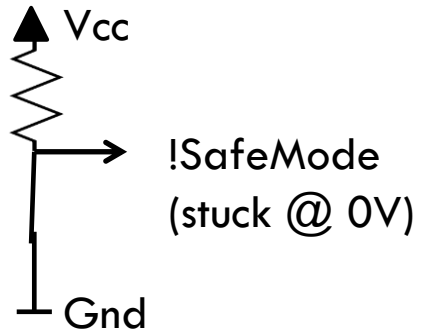
Underside of CRIO

Check connectivity between GROUND and the output of the DIP switch on the SAFE MODE pin. Use connectivity test mode on a multimeter. You should have connectivity (BEEP!) when in safe mode. This means the output pin is grounded. In NON-SAFE mode (can re-image mode) there should be NO connectivity.

Our switch was shorted so the output pin was always at ground. If your output pin switches between connected and unconnected, it is working. Don't go any further because the next step is DESTRUCTIVE.

Shorted ON DIP Switch

Shorted Switch

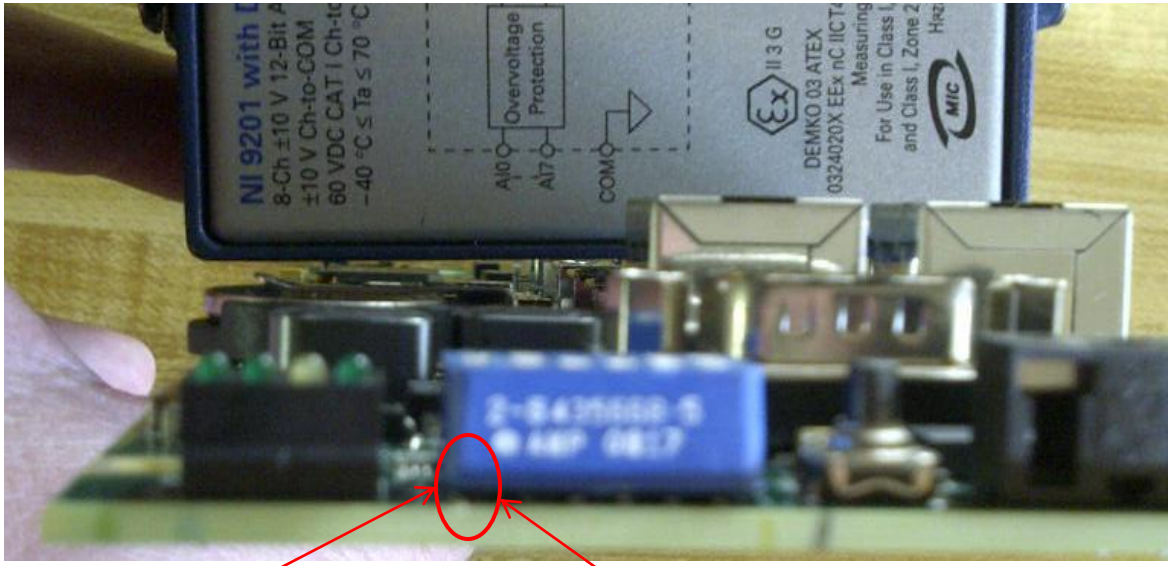


Shorted ON SAFE-MODE SWITCH

If you SAFE MODE switch is shorted ON, you will not be able to re-image with the 2012 code. There are 3 ways to fix it:

1) Send it back to National Instruments for repair. We decided we didn't want to wait. Or…
2) Unsolder the DIP switch and install a new one. You will need professional HIGH-TEMP desoldering equipment (better than even a high-quality 800 degree soldering station) or a friend in the electronics assembly business. Or…
3) Some steady hands and an Xacto blade.

Xacto Hack



Cut this pin

1) Insert knife with sharp side pointing toward SAFE MODE pin.
2) Cut SAFE MODE pin by sliding knife to the left (in this pic).
3) Use canned air to clean out any refuse

Getting back into Safe Mode

- You can solder a wire across the ground and SAFE_MODE output pin on the back of the board, however, when I did this we had problems connecting the 2012 WRWB debugger (C++) to this target
- I elected to leave it in NON_SAFE mode as this is our backup CRIO

Reassemble

- Put the parts back together the way they were ☺